Claims as Pending

28. (Amended) A T-cell epitope having an amino acid sequence ILVPKVSGL (SEQ ID NO: 1), RLVWACVGV (SEQ ID NO: 2), HLFNRAGTV (SEQ ID NO: 3), YLRREQMFV (SEQ ID NO: 4), TLQANKSEV (SEQ ID NO: 5), ILEDWNFGL (SEQ ID NO: 6), SLWLPSEATVYL (SEQ ID NO: 7), NLASSNYFPT (SEQ ID NO: 8), TLTADVMTYI (SEQ ID NO: 9), YLPPVPSKV (SEQ ID NO: 10), YDLQFIFQL (SEQ ID NO: 11), ICWGNQLFV (SEQ ID NO: 12), FYNPDTQRL (SEQ ID NO: 13), MHGDTPTLH (SEQ ID NO: 14), ETTDLYCY (SEQ ID NO: 15), QAEPDRAHYN (SEQ ID NO: 16), SMVTSDAQI (SEQ ID NO: 17), and/or a functionally active variant thereof.

29. (Amended) The T-cell epitope as claimed in claim 28, wherein said variant has a sequence homology to ILVPKVSGL (SEQ ID NO: 1), RLVWACVGV (SEQ ID NO: 2), HLFNRAGTV (SEQ ID NO: 3), YLRREQMFV (SEQ ID NO: 4), TLQANKSEV (SEQ ID NO: 5), ILEDWNFGL (SEQ ID NO: 6), SLWLPSEATVYL (SEQ ID NO: 7), NLASSNYFPT (SEQ ID NO: 8), TLTADVMTYI (SEQ ID NO: 9), YLPPVPSKV (SEQ ID NO: 10), YDLQFIFQL (SEQ ID NO: 11), ICWGNQLFV (SEQ ID NO: 12), FYNPDTQRL (SEQ ID NO: 13), MHGDTPTLH (SEQ ID NO: 14), ETTDLYCY (SEQ ID NO: 15), QAEPDRAHYN (SEQ ID NO: 16), or SMVTSDAQI (SEQ ID NO: 17) of at least approx. 65%, preferably at least approx. 75% and in particular at least approx. 85% at the amino acid level.

30. (Amended) The T-cell epitope as claimed in claim 28, wherein said variant is structurally homologous to ILVPKVSGL (SEQ ID NO: 1), RLVWACVGV (SEQ ID NO: 2), HLFNRAGTV (SEQ ID NO: 3), YLRREQMFV (SEQ ID NO: 4), TLQANKSEV (SEQ ID NO: 5), ILEDWNFGL (SEQ ID NO: 6), SLWLPSEATVYL (SEQ ID NO: 7), NLASSNYFPT (SEQ ID NO: 8), TLTADVMTYI (SEQ ID NO: 9), YLPPVPSKV (SEQ ID NO: 10), YDLQFIFQL (SEQ ID NO: 11), ICWGNQLFV (SEQ ID NO: 12), FYNPDTQRL (SEQ ID NO: 13), MHGDTPTLH (SEQ ID NO: 14), ETTDLYCY (SEQ ID NO: 15), QAEPDRAHYN (SEQ ID NO: 16), or SMVTSDAQI (SEQ ID NO: 17).

31. The T-cell epitope as claimed in claim 28, wherein the T-cell epitope is a cytotoxic T-cell epitope.

32. A compound comprising a T-cell epitope as claimed in claim 28, wherein the compound is not a naturally occurring L1 protein of a papillomavirus and not an exclusively N-terminal or an exclusively C-terminal deletion mutant of a naturally occurring L1 protein of a papillomavirus.

33. The compound as claimed in claim 32, wherein the compound is a polypeptide, in particular a fusion protein.

34. The compound as claimed in claim 32, wherein the compound is a polypeptide of at least 50 amino acids in length.

35. The compound as claimed in claim 32, wherein the compound is a polypeptide of at least 35 amino acids in length.

36. The compound as claimed in claim 32, wherein the compound is a polypeptide of at least approx. 20 amino acids in length.

37. The compound as claimed in claim 32, wherein the compound is a polypeptide of at least 9-13 amino acids in length.

38. The compound as claimed in claim 32, wherein the compound contains a label selected from the group consisting of a chemical, radioactive, nonradioactive isotope and fluorescent label.

39. A nucleic acid, wherein the nucleic acid codes for a T-cell epitope as claimed in claim 32.

40. A vector containing a nucleic acid as claimed in claim 39.

41. A cell containing at least one T-cell epitope as claimed in claim 32.

42. The cell as claimed in claim 41, wherein the cell is transfected, transformed, or infected with a nucleic acid as claimed in claim 39.

43. The cell as claimed in claim 41, wherein the cell was incubated with at least one compound as claimed in claim 32.

44. The cell as claimed in claim 41, wherein the cell is selected from the group consisting of a B cell, a macrophage, a dendritic cell, a fibroblast, in particular a JY, T2, CaSki cell and EBV-transformed cell.

45. A complex comprising a T-cell epitope as claimed in claim 28 and at least one further compound.

46. The complex as claimed in claim 45, wherein the complex contains at least one MHC class I molecule.

47. The complex as claimed in claim 45, wherein the complex contains a human MHC class I molecule

48. The complex as claimed in claim 46, wherein the MHC class I molecule is a HLA A2.01 molecule.

49. A method for in vitro detection of the activation of T cells by at least one compound containing a T-cell epitope as claimed in claim 28, which comprises the following steps:

a) stimulating cells using at least one said compound;
b) adding at least one target cell presenting a T-cell epitope as claimed in claims 28 or a complex as claimed in claim 45, and
c) determining T-cell activation.

50. The method as claimed in claim 49, wherein said method further comprises, after step a), the following additional step a'):

a') coculturing of the cells for at least 1 week with a substance selected from the group consisting of:
(i) at least one target cell loaded with a substance selected from the group consisting of a compound as claimed in claim 32, at least one complex as claimed in claim 45, at least one capsomer, at least one stable capsomer, at least one VLP, at least one CVLP, and at least one virus,
(ii) at least one complex as claimed in claim 45, and
(iii) at least one target cell presenting a T-cell epitope as claimed in claim 28,
prior to step b).

51. A method for producing a target cell as claimed in claim 41, comprising incubating the target cell with at least one compound as claimed in claim 32.

52. A method for producing a target cell as claimed in claim 41, wherein the method comprises transfecting, transforming, or infecting the target cell with a nucleic acid as claimed in claim 39.

53. A method for producing a target cell as claimed in claim 51 or 52, wherein the target cell is selected from the group consisting of a B cell, a macrophage, a dendritic cell, a fibroblast, in particular a JY, T2, CaSki cell and EBV-transformed cell.

54. The method as claimed in claim 49, wherein instead of step a) the following step a") is carried out:

a") producing and preparing samples containing T cells and subsequent culturing.

55. An assay system for in vitro detection of the activation of T cells, comprising:
(a) a substance selected from the group consisting of at least one T-cell epitope as claimed in claim 28, at least one compound as claimed in claim 32, at least one vector as claimed in claim 40, at least one cell as claimed in claim 41, and at least one complex as claimed in claim 45, and
(b) effector cells selected from the group consisting of the immune system, T cells, cytotoxic T cells and T helper cells.

56. A method of causing or detecting an immune response, the method comprising using a substance selected from the group consisting of at least one T-cell

epitope as claimed in claim 28, at least one compound as claimed in claim 32, at least one vector as claimed in claim 40, at least one cell as claimed in claim 41, and at least one complex as claimed in claim 45.

57. A medicament or diagnostic agent, comprising a substance selected from the group consisting of at least one compound as claimed in claim 32, at least one vector as claimed in claim 40, at least one cell as claimed in claim 41, and at least one complex as claimed in claim 45.

58. The medicament or diagnostic agent as claimed in claim 57, wherein a substance selected from the group consisting of at least one compound as claimed in claim 32, at least one vector as claimed in claim 40, at least one cell as claimed in claim 41, and at least one complex as claimed in claim 45 is present in solution, bound to a solid matrix or mixed with an adjuvant.